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ABSTRACT

Vocational and technical training programs for less developed countries offer little in the way of training the intermediate cadres, technicians, and village level workers necessary for modernizing the primary sector on which developing economies depend. Training is vital because it secures cost reduction and maximum use of organization, enables people to face changes involved by new techniques and products, improves job performance and gives greater job satisfaction, and brings higher standards of workmanship by improving goods and services. Training needs exist at organizational, occupational, and individual levels. The main steps in developing a successful and effective training program are creation of interest in training activities, development of training process and content of training, analysis, generalization or inferences, and practice or tryout or internalization of abstractions. A well-defined evaluation process is essential to continuously monitor the fulfillment of training objectives. Four levels in the evaluative process include evaluation of reaction to training, evaluation of learning resulting from training, evaluation of change in job behavior caused by training, and evaluation of tangible results of training and their comparison with objectives. Methods used to measure the learning effect of training programs include observation, role playing, case study, surveys, and examination/tests. (NEC)

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DESIGN AND EVALUATION OF EFFECTIVE TRAINING PROGRAMS FOR AGRICULTURAL AND RURAL DEVELOPMENT.

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DESIGN AND EVALUATION OF EFFECTIVE TRAINING PROGRAMS FOR AGRICULTURAL AND RURAL DEVELOPMENT

Less developed countries (LDCs) have undoubtedly suffered, and are still suffering, from countries much of the formal education system has been inherited from the colonial era and expanded with few modifications. Vocational and technical training programs, including extension, neglected during the pre-independence period have been imported "ready made" and are geared to the requirements of advanced countries. They offer little in the way of training intermediate cadres, technicians and village level workers, necessary for modernizing the primary sector on which developing economies depend. In this paper attempt is made to define and discuss training; and discuss design and evaluation of training programs with special regard to situations in LDCs. However, many of the basic principles and approaches are applicable to any developed or developing country.

TRAINING AND TRAINING NEED

Training is distinct from education in the sense training is specific to a job or role whereas education is general. Training is mainly concerned with three basic areas - changes in knowledge, skills, and attitude of the people keeping in view a specific job.

The overall economic development of a country rests upon the maximum utilization of the available resources, including human resources which is most vital in the LDCs context. Alfred Marshall wrote in the principles of economics that "the most valuable of all capital is that invested in human beings". In LDCs, workers involved aiding agricultural and rural development have to constantly learn new technological innovations in order to help the masses. They should not only be knowledgeable in subject matter but also be good in understanding human behavior and problems facing the masses. Without

these skills these workers would not be successful and therefore increasing their number without increasing their quality will not produce expected results. Investments in human resources (workers) improves the physical and mental abilities of people. These investments in human resources can be made through effective (job specific) training programs.

With rapid changes, obsolescence in knowledge and skills is taking peace in the surrounding environment, in big way. There is, therefore, the need for workers and their supervisors to update their knowledge, skills, and patterns of behavior to be effective in the changing millieu; it calls for adaptation and flexibility in the approach to the problem learning, therefore, becomes a life-long process [1].

Training is vital to an organization, department, company and an individual because:

(1) it is essential to secure cost reduction and maximum use of organization
(2) it enables people to face the constant changes involved by new techniques and products
(3) it improves job performance and gives greater job satisfaction
(4) it brings higher standards of workmanship by improving goods and services

A training need exists when a work performance problem can be traced directly to a skill deficiency, i.e., there is a gap between employees level of competence and a target performancae level as defined by the individual and his organization [2]. Briefly, a training need can be described as a specific skill which an individual must acquire in order to perform a task efficiently and effectively. Training needs exist at three levels:

(1) organizational level: refer to training needs in areas of general weakness within the organization. The assessment of needs would involve the efforts that are made to determine where, in the organization, training is most needed.

(2) occupational level needs: refere to training that is required to upgrade certain job functions. It concentrates on skills, knowledge and attitudes necessary to carryout duties related to a particular function.

(3) Individual level needs: refer to identification of "who needs training on what".

Training need applies to the total growth and effectiveness of the individual particularly as the person expands his abilities toward the potential that he shows capable of achieving. The definition of training needs should necessarily therefore emphasize both the current and potential perceived needs of the individual or organization [2].

DESIGNING OF EFFECTIVE TRAINING PROGRAMMES

The fundamental difference in educating children and in adult learning is that the onus of imparting knowledge to children rests with the teacher, it is not so in adult learning (training) where the onus of learning is on the adult learner (trainee) and the trainer merely acts as a "facilitator", i.e., helper in acquiring the desired knowledge.

The main steps in adeveloping a successful and effective training programs are:

(I) Creating interest in training activity
(II) Development of training process and content of training
(III) Analysis
(IV) Generalization or inferences
(V) Practice or tryout or interlisation of abstractions

The above steps can be shown in a learning design model drawn in Figure 1. The various steps and substeps conceived in the proposed design are briefly explained below.

I. Creating Interest in Training Activity

It is one of the fundamentals of learning psychology that we learn best what we want to i.e. in which we are interested. A trainer showed begin by taking up of a simple but a generally related experential topic for discussion both to gauge the level of trainee as well as to evoke their interest in what he later introduces a "course content" or input. It should require the trainees to become involved in situations entailing the same skills, process, ideas or

attitudes that will develop in the learning session or skill session that will follow. Some examples of situations, exercises, or simulations that the trainer can use to develop this initial experience are: games, pretests, and instrumented feedback.

II. Development of Training Process and Content of Training.

The next step is for the trainer to give a brief 'content input' i.e., introduce the subject briefly and not go into much details. Each case/session has to be decided by the trainer on its own merits. The role of the context input is to give the trainees a model against which they can analyse their on-the-job behavior and training expeerience.

Every instruction strategy has certain advantages and limitations careful consideration should bae given to the advantages and limitations of each to ensure that the strategy selected for specific program will be effective. Design decision must be made based on an analysis of the training situation from several points of view; the instructional objectives, the course content, the student population and class size, the instructors, the facilities, the equipments and materials, the time available and the costs.

The fact that trainer is merely a "facilitator" not a "teacher", should be kept with learning model guidelines rather than teaching model and should be designed that quest for learning is generated maintained and enhanced throughout the program. The more meaningful the subject matter is to trainees, the more tehy will be able to learn it. For a program to be meaningful, is should be so designed that content, inputs, examples, practice, sessions, and feedback relate to their experiences, interests and values or to their recognized immediate future activities.

III. Analysis

Next step is analysis of experience of trainees against the content input, in an individual settling, the options of individual analysis, small group

analysis or team analysis should be considered to suit the design. After a small group analysis, the trainer should bring all the trainees together for a debriefing. This debriefing can be facilitated by helpful guidance of relevant questions to be answered.

IV. Generalizations: From Concrete to Abstract

Based upon the analysis just completed generalization or inference can be drawn. These can later be put into practice in actual work situation. Drawing of generalizations can be helped by throwing open ended rather than leading questions to participants.

V. Practice or Tryout or Internalization of Abstractions

The trainees than test the generalization in practice for validation in specific job related issues. The practice sessions in the classroom ought to be as job specific as possible and the same should be spread over a period of time at regular intervals, for being effective.

Effectiveness of a training programme is measured by the amount of elimination of the gap that existed in terms of knowledge, skill, attitude and behaviour. Needless to say those trained should be given opportunities to put their learning to effective use. Above all unless there is a culture of learning in an organization no amount of training of individuals with help. 'Organizational development' should go hand-in-hand with training and management development [2].

EVALUATION OF TRAINING.

Training for the sake of training or for ill defined hazy objectives would not producr desired results. The ultimate aim of training being improved performance on-the-job, it is essential to have well defined training objectives as a system to continuously monitor training so as to facilitate fulfillment of these objectives. To achieve this, it is essential to develop a system to evaluate training, which is capable of measuring training output

in a form comparable to the set objectives. The place of evaluation in the integrated training function is depicted in Figure 2.

The evaluation serves to enhance the quality of programmes, quality of curricula, learner outcomes and cost effectiveness. Following are various potential benefits of training evaluation:

1. It provides information about the effectiveness of training in meeting the set targets.
2. It contributes to the process of control over the training staff and facilities and thus helps in optimal utilization of these resources.
3. Evaluation provides justification for expenditure on training and promotes greater efficiency in the allocation of available and potential resources.
4. It helps in identification of training needs.
5. An effective evaluation system is capable of being used as a decision-aid in setting attainable and motivation training objectives and their continuous monitoring to organizational needs and environment.

Process of Evaluation

The total evaluation process can be broken down into four different levels based upon the aspect of training being evaluated. These four steps are given below:

1. Evaluation of reaction to the training.
2. Evaluation of the learning that resulted from training.
3. Evaluation of the change in the job behaviour caused by the training or the implementation of the principles, facts and techniques learned through training.
4. Evaluation of the tangible results of the training and their comparison with the set objectives.

1. Evaluating reaction:

The only possible way to have an instantaneous evaluation of a training program is evaluation of the reactions or measurement of the change in level of knowledge of the participants. Also reaction reflects interest of the participants in the programme, which is important pre-requisite to effective

learning. Following one of the main steps in evaluation of reaction to the training:

(a) Specify the objects of evaluation, i.e., the aspects on which you feel reactions of the participants one important, e.g. teaching aids, administration, curriculum, teaching styles techniques, support staff etc.

(b) Prepare an evaluation sheet covering the items determined in step 1 above.

(c) The respondent, should be allowed to write in additional comment and make suggestions in addition to the structured questions.

(d) The evaluation of the training by trainees should be supplemented by evaluation done by the coordinator.

(e) Open discussion and observation techniques should also be used to evaluate the training program.

2. Evaluating Learning:

A favourable or positive reaction to a programme does not necessarily imply a positive output of the programme in terms of effective learning which has taken place. It does not provide us any information as to whether any principles, facts, techniques or skills have been understood and absorbed by the participants or not. The second step in evaluation of a training programme is to measure the extent to which the programme has been able to impart knowledge and skills to the trainees. There are various methods which can be used to measure the learning effect of a training program.

(a) Observation: A very effective way of evaluating the skill learned is to observe actual performance and to analyse it in terms of established criteria. Changes in skill and attitude can be measured most effectively by observing the classroom performance of the participants. Observing the trainees participating in games, practical work, interpersonal contacts, etc. provides direct feedback to the trainer about the learning.

(b) Role Play: Role playing is usually considered to be a method of instruction. However, it can be quite effectively used as a means of evaluation of learning of practical skills, e.g., role playing can be used to evaluate learning when training is aimed at teaching skills of interviewing, conducting meetings, etc.

In such situations, evaluation is integrated with the instruction. Video recordings can be used to support this form of evaluation.

(c) Case Study: Case study can be used for pre- and post-training evaluation to measure the extent of learning of different principles, facts, and skills.

(d) Surveys: Surveys can be used most effectively to measure the extent to which training has influenced the attitude of the participants. Attitudes can best be measured from the trainee's own description of the attitude and thus surveys prove to be the most suitable method of measuring attitudinal changes.

(e) Examinations and Tests: Where principles and facts are taught rather than skills, the most common technique used to evaluate learning is pen and pencil tests. The tests and examinations are designed based on training objectives and the content of training to meet such objectives. Standardized tests are also available to measure learning of different subjects, but to the most effective, test should be tailor made and should reveal how much of the instruction was understood and remembered. Possibly the most effective and most often used form of test for purposes of evaluating training, is objective type test. These tend to reduce subjectivity on the part of the evaluator.

3. Evaluation of Behavior:

Evaluation of training programs in terms of on-the-job behavior is more difficult than the reaction and learning evaluations. A more scientific approach is needed and many factors must be considered. Some of the methods which can be used to evaluate on-the-job behavior are:

(a) On-the-job observations.

(b) Follow-up Seminars.

(c) Re-entry Projects.

4. Evaluation of Results:

The objectives of most training programs can be stated in terms of results such as reduced turnover, reduced costs, improved efficiency or improved morale. It is essential to evaluate training in the same terms to measure its overall effectiveness and worthiness of effort and money soent on it. Certain kinds of training programs, though one relatively easy to evaluate in terms of results. There are various quantitative methods which may be used to measure the outcomes of a training program and thus to evaluate it in terms of its results.

5. Financial Evaluation of Training:

The evaluation of training can not be considered to be complete or total unless and until it enables the training director to justify the costs incurred on training. For training to become fully acceptable as an integral part of an organization's operating plan it must first be recognized as a function which makes a positive contribution to the success of the organization within the cost limitations imposed upon it. To achieve this goal, cost effectiveness must become a vital part of the design and development of the training plan.

Financial evaluation of training, as an organizational activity, has been paid little attention to. With the recent interest in human resource accounting and other methods of measuring human performance and development, there has been an increasing interest in estimating the financial returns of training. One possible appreach to the financial evaluation of training is: Objective evaluation of individual training programme to show its financial effects on the organization: this can be achieved through use of cost Benefit Analysis.

6. Cost Benefit Analysis:

Cost Benefit Analysis is the method of assessing total value of benefits against total cost. Basically it involves the following three steps:

(a) Identification and monetary measurement of programme costs;

(b) Identification and quantification of benefits of the training programme in monetary terms;

(c) Comparison of programme costs and benefits.

7. Programme Costs:

These are fairly easy to identify and can be categorized into development and acquisition costs and operating costs. The first category includes:

(a) costs of training-staff (salaries, benefits etc.);

(b) costs of expert consultants (external and internal);

(c) material costs;

(d) equipment costs;

(e) programme-trial costs (facilities, materials, staff, trainee costs, equipment costs);

(f) programme refinement or redesign costs (staff time, consultant time, etc.).

The operating costs comprise:

(a) Instructional staff costs;

(b) material costs:

(c) facilities costs;

(d) equipment costs;

(e) trainee costs (salaries, etc.).

8. Programme Results:

Benefits of a programme or the behavioural and performance improvements, are most difficult to measure. However, there are various ways to measure results and reasonable estimates can often be made from some of the approaches earlier outlined. Once estimates of performance improvement are made, monetary values can be placed on the improvements to permit comparisons with programme costs. Of course, it is much simpler to assign values, at skill training levels as the work performance is better defined and more measurable at the production level than at the managerial level. However, work-group results or behaviours such as production, work quality, turnover, grievances, and absenteeism can be used as measures of managerial performance.

9. Comparison of Costs and Benefits:

Meaningful comparison can be made by calculating Return on Training Investment (ROTI). It is calculated by finding out the total additional revenue accruing as a result of training and the total cost of training and dividing total revenue by total cost:

$$\text{ROTI} = \frac{\text{Total Revenue}}{\text{Total cost}}$$

The cost benefit approach to evaluating training programmes is useful for toning up the effectiveness of training or management development programme by making them more result oriented as well as cost effective. However, this technique has got its limitation. It is not always possible to measure the benefits of a training programme in quantitative terms, e.g., in many training programmes results are measured by comparison of pre-training and post-training behaviour and observation of general performance of the trainees etc.

A second problem is manifested where joint costs are involved and it is not practical to allocate these to different programmes accurately [2].

REFERENCES

1. Srivastava, R. K. "Designing Effective Training Programs" Towards Continuing Education. PECCE. July-September 1985, pp. 166-173.

2. Training For Agriculture and Rural Development: FAO Economic and Social Development Series, No. 14, 1978.

3. Srivastava, R. N. "Training Needs Assessment" Towards Continuing Education. PECCE. July-September 1985, pp. 138-143.

4. Rowat, R. Trained Manpower For Agricultural and Rural Development. FAO Economic and Social Development Paper, No. 10, 1979.

5. Aggarwal, Sunita. "Evalluation of Training: An Objective Approach". Towards Continuing Education, PECCE. July-September 1985, pp. 151-159.

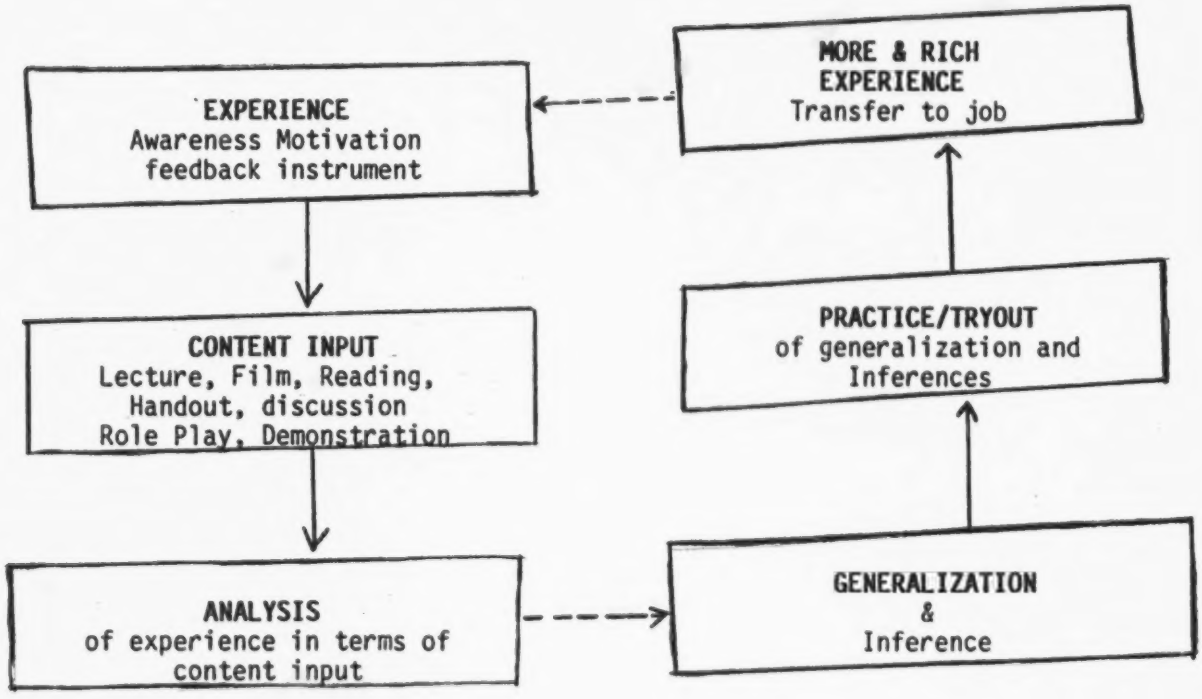

Figure 1. Learning Design Model.

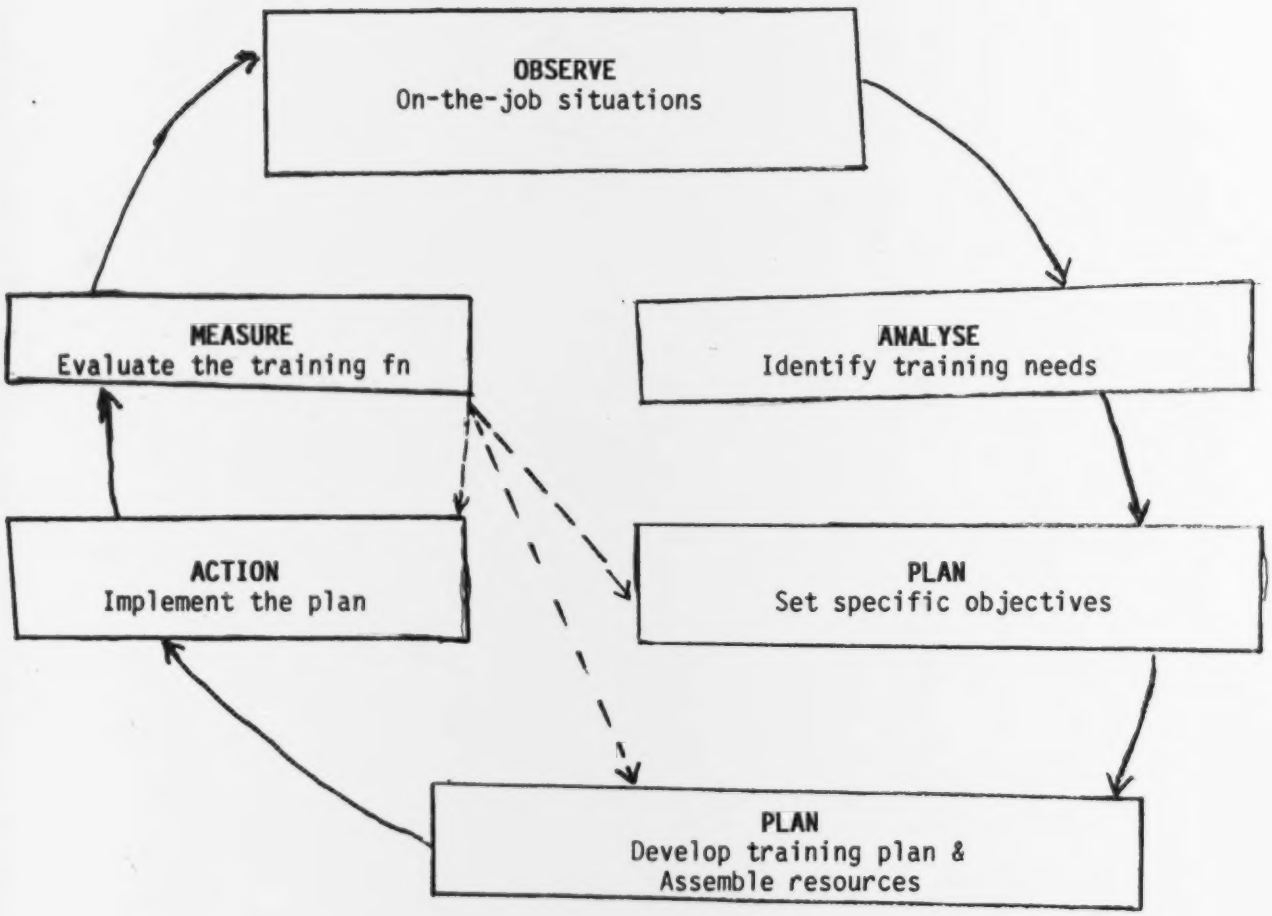

Figure 2. Place of Evaluation in The Integrated Training Function.